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Assistive Technology in Transition Programming for Individuals with Intellectual Disabilities

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Assistive Technology in Transition Programming

for Individuals with Intellectual Disabilities

Presented in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Occupational Therapy

Eastern Kentucky University
College of Health Sciences
Department of Occupational Science and Occupational Therapy

Jennifer Veenendall, MS OTR/L
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EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY

This project, written by Jennifer Veenendall under direction of Dr. Shirley O'Brien, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

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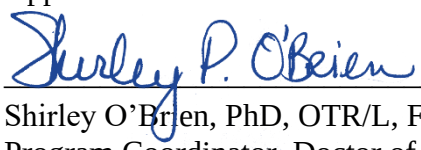
Certification

We hereby certify that this Capstone project, submitted by Jennifer Veenendall, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

Approved:



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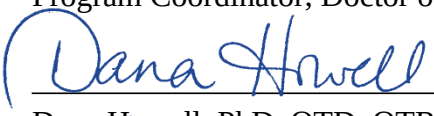

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Executive Summary

Background: Individuals with intellectual disabilities are employed at lower rates than those without disabilities and evidence supports the use of assistive technology (AT) to improve vocational outcomes for this population. The provision of program-specific AT training increases the application of quality AT service indicators among transition program special educators.
Purpose: The purpose of this capstone project was to develop and evaluate the impact of a program-specific AT professional development training for special education staff in a secondary transition program.
T**heoretical Framework:** The Student, Environment, Tasks, and Tools (SETT) framework drove this capstone project inquiry and guided the development of the AT professional development training for special educators.
Methods: A pre-experimental one-group pretest-posttest design was used to measure outcomes of AT training among three special educators. Pre-and post-training surveys determined the impact of training on the consideration, assessment, and documentation of AT, in addition to levels of team collaboration and perceived confidence.
Results: Pre- and post-training survey results indicated increased application of quality AT services in most areas. The survey results also suggested an increase in team collaboration and confidence levels regarding the training content.
Conclusions: The implementation of program-specific AT training for special educators in one transition program resulted in increased application of quality AT services. This feasibility study effectively established the need for additional research to determine the impact on larger populations and potential to add to evidence-based interventions leading to improved vocational outcomes and life satisfaction for individuals with intellectual disabilities.

Acknowledgements

First, I must acknowledge and thank Jim Schreiber and the Plantables employees. You have all opened my eyes and heart to the occupational injustices our community members with intellectual disabilities often experience and the possibilities that exist for meaningful work, cultivating the purest joy. The Plantables community is a powerful one that can change a person's life work.

I also wish to thank the EKU faculty I have been so fortunate to learn from. You have validated my work and helped me to connect back to my occupational therapy roots. Your guidance, support and passion for our profession has ignited a drive in me to become that agent of change.

I want to recognize and thank the late Joy Zabala (November, 1946 - July, 2021**).** As creator of the SETT framework and a co-founder of the QIAT community, Joy's life work has guided my development as an Assistive Technology Professional and sparked a need to impact the assistive technology community of professionals. Your passionate work will live on, but you and your continued contributions to the AT community will be missed.

Finally, a big thank you to my husband Scott for taking on those extra responsibilities so I could pursue my academic dream. I may not miss your sloppy joe and French fries dinner, but I appreciate all you have done to help make this possible.

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CERTIFICATION OF AUTHORSHIP

Submitted to: Dr. Shirley O'Brien
Student's Name: Jennifer Veenendall
Title of Submission: Assistive Technology in Transition Programming for Individuals with Intellectual Disabilities

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Jennifer Veenendall

Date of Submission: 11.3.2021

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Section One: Nature of Project and Problem Identification

Meaningful work provides individuals with many incentives. These include purpose, pride, financial, and social connectedness. Participation in work contributes to one's overall health and well-being (Ellenkamp et. al., 2015). Individuals with intellectual disabilities experience significantly less opportunity for meaningful work, an occupational justice issue inhibiting their inclusion and integration into their communities.

Public policy efforts have evolved to positively impact the lives of individuals with disabilities and improve vocational outcomes. In 1990, the Americans with Disabilities Act (ADA; Pub. L. 101-336) provided individuals with disabilities the legal right to work. The Individuals with Disabilities Education Improvement Act (IDEA; Pub. L. 108-446) updated its transition service directive to better support students in their move from school-based services to employment (Rosner et. al., 2020). The 2014 Workforce Innovation and Opportunity Act was designed to improve vocational outcomes for Americans with significant barriers to employment, including those with disabilities (United States Department of Labor Employment and Training Administration, 2016). The Supreme Court's ruling on Olmstead v. L.C. required that states "eliminate unnecessary segregation of persons with disabilities" mandating that states develop frameworks to ensure that persons with disabilities have the opportunities to engage in integrated settings, including work. (United States Department of Justice, n.d.)

Despite these policy efforts, the likelihood of individuals with disabilities to be employed is limited, when compared to non-disabled peers, across all age groups.
(United States Department of Labor Bureau of Labor Statistics, 2021). According to Winsor et al. (2018), only 14% of individuals with intellectual and developmental disabilities experienced integrated competitive employment. This can be compared to the American Community Survey

results, which indicate an employment rate of 23.9% of working age individuals with disabilities as a whole (Erickson et al., 2019). The reasons for this disparity are complex, however studies suggest that employers have despairing views about the work-related skills among individuals with disabilities that are not based in evidence (Bonaccio et al., 2019). For example, employers are pessimistic about the work capabilities of this population and often believe that individuals with disabilities are not motivated to work. They also fear that these workers may not fit in socially (Bonaccio et al., 2019). Additionally, the COVID-19 Pandemic has exacerbated the employment inequities for this population. Individuals with disabilities have been removed from the workforce at higher rates than those without due to challenges in the implementation of technology for work-from-home opportunities and the lack of personnel support for in-person job possibilities during the crisis (Rumrill et al., 2021). According to the United States Department of Labor Bureau of Labor Statistics, in 2020, 8 in 10 individuals with disabilities were reported to not even be in the labor force. This statistic is compared to 3 in 10 of those with no disability (United States Department of Labor Bureau of Labor Statistics, 2021).

Federal special education legislation identifies the important role that assistive technology (AT) plays in improving accessibility and educational outcomes for students with identified disabilities. The Individuals with Disabilities Education Improvement Act of 2004 (IDEA) mandates that public schools provide AT devices and services for special education students who demonstrate a need for them to ensure a free and appropriate public education (FAPE) with access to curriculum and educational materials. Policy also supports AT consideration and implementation for adults with disabling conditions. The state of Minnesota's Olmstead Plan specifically addresses AT with a vision statement aiming to increase access to AT in an effort to "support living, learning, working and enjoying life in the most integrated

settings" (Minnesota Department of Human Services, 2020). Thus, policy efforts link the use of AT to enhance individuals with disabilities' opportunities to work and engage in their communities.

According to Bowser et al. (2015), school systems struggle to address these assistive technology policies and develop systems that proficiently address student AT needs. A lack of AT knowledge and training opportunities are discussed in the literature and likely contribute to this. Boot et al. (2018) studied the access to assistive technology among individuals with intellectual disabilities and found that in addition to concerns regarding funding AT, reported barriers including lack of awareness about assistive products and less than adequate assessments. Copley and Ziviani (2004) reported on the problems that interfere with effective AT application among individuals with multiple impairments in the school setting. Lack of adequate AT training, ineffective assessment processes, lack of AT planning, funding issues, equipment issues and time constraints were noted as most significant. This is of concern in preparing students for career readiness.

Numerous factors contribute to the obstacles that individuals with intellectual disabilities face related to gaining and maintaining meaningful jobs. A needs assessment was completed during Summer 2020 in a midwestern city to determine if special education staff working with young adults with intellectual disabilities in post-secondary programs demonstrated knowledge and promising practice in the consideration, assessment, and documentation of assistive technology to improve vocational outcomes for their students. The outcomes suggested a gap exists between the intent of policy and the local district-provided guidelines and the practice of Individualized Education Program (IEP) teams when working with transition program students with intellectual disabilities (ID) in the school district. It identified a need for transition

program-specific professional development training to more effectively support young adults with intellectual disabilities.

Occupational therapists are key professionals to impact this disparity with our occupation-based intervention skills and commitment to occupational justice. Occupational justice plays a central role in our occupational therapy profession, affirming that all persons have the right to access and engage fully in meaningful occupations within society (AOTA, 2020). We are skilled in remediation as well as adapting environments and simplifying tasks for improved access and participation in meaningful work occupations. Rosner, et al. (2020) completed a scoping literature review specific to individuals with ID in the transition from school to work, finding that all reviewed studies described interventions that align with the occupational therapy scope of practice. None of these studies mentioned occupational therapy involvement in interventions, nor were any study authors occupational therapists. Additionally, the interventions had low evidence levels to support their use. Rosner, et al.'s (2020) study directly supports this project by establishing the need for greater representation of occupational therapists in transition programming to improve outcomes for this population through the development and execution of studies to measure the effectiveness of interventions. The ACOTE standard section B.4.11. (American Occupational Therapy Association, 2018) addresses entry-level occupational therapy knowledge and application of assistive technologies and devices, ensuring that OT practitioners are skilled in assessing for AT need as well as producing, applying, fitting and training others to improve occupational performance and positively effecting engagement and wellness. Thus, occupational therapists are valuable members of special education teams to collaborate with other professionals and support them in their development of problem-solving decision-making related to the provision of person-specific assistive technology tools and materials.

Problem Statement

A gap exists between the intent of special education assistive technology policies, district-provided guidelines, and the practice of IEP teams when working with transition program students with intellectual disabilities in a Midwestern school district. Reviewed literature indicates that despite federal and state policy efforts to improve the integrated employment outcomes and increase access to assistive technologies among this population, public education agencies are struggling to effectively address the employment disparity individuals with ID experience. A needs assessment was conducted during Summer 2020. Data indicated insufficient AT consideration, assessment, and documentation in this secondary transition program for individuals aged 18-21 among two special education case managers who service 26-30 young adults with disabilities.

Purpose

The purpose of this Capstone Project was to develop and evaluate the impact of a program-specific AT professional development training for special education staff in a post-secondary transition program. The training was designed to positively impact the consideration, assessment, and documentation of AT, as well as advance the problem-solving abilities and level of confidence necessary to match young adults with ID with AT. It is the intent that this work will lead to improved vocational outcomes and integrated opportunities for this population.

Objectives

This Capstone Project focus is on impacting integrated employment outcomes for young adults with ID as they transition from a school setting into society. By addressing employment outcomes, young adults leaving the school setting and moving into societal roles will contribute

to a wider range of work opportunities available to them through the increased consideration of AT. The project included four primary objectives:

1. The special educators will demonstrate improved confidence in knowledge and resources to match student need with AT tools.
2. The special educators will demonstrate improved abilities to thoroughly consider and assess individual student AT needs.
3. Special education teachers will demonstrate improved abilities to document AT consideration and assessment in special education comprehensive evaluations and individualized education programs (IEPs).
4. Members of the IEP teams, including transition students, will demonstrate greater collaboration around AT problem-solving between members of IEP teams, including transition students.

Theoretical Framework

The Student, Environment, Tasks, and Tools (SETT) framework drives this capstone project inquiry and guides the development of the AT professional development training for special educators. SETT is a decision-guiding structure for teams to ensure a consistent and effective method to match AT to individual need, taking aspects of the student, their specific environments and tasks into consideration when making AT tool decisions (Zabala, J., 1995). The Quality Indicators for Assistive Technology (QIAT) leadership team has provided educational teams with guidance in AT decision-making and practices through the publication of self-evaluation matrices (Bowser et al., 2015). These matrices guide this project with its structure and ability to define areas for improvement.

Significance of the Study

This study aims to address a gap in special educators' knowledge and application of assistive technology decision-making when working with persons with ID in secondary transition services. It demonstrates the effect of AT training specific to the needs and tasks within a transition setting. *Healthy People 2030* addresses disability and health and asserts that all individuals need opportunities for daily activities that are meaningful and contribute to their communities (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). The broader application of this study addresses this population's social and health disparity leading to greater participation in the community through the increased use of strategies and tools that increase independent function and success. This has potential to substantially increase community understanding of the contributions individuals with intellectual disabilities can bring to places of employment for more equitable and just outcomes.

Through application of occupational therapy knowledge and skill in AT, this study supports the empowerment of teachers and students. Knowledge is power and it contributes to one's self-perception of competency. Not only does this training promote confidence in the AT consideration and problem-solving process among special educators, but this work seeks to help young adults see themselves as unique individuals with the opportunities to make choices in their occupations by expanding their abilities to complete work tasks through the use of adaptive equipment and technology.

Summary

While technology plays an important role in the lives of most people, it can be critical in the life of a person with a disability by helping to overcome barriers and provide them with access to their activities (Bowser et. al., 2015). Assistive technology must be considered for

every student receiving special education services. According to the Individuals with Disabilities Education Act (IDEA), educators are required to consider assistive technology and to provide it for students who need it to achieve their goals. The provision of AT devices and services fits naturally into the occupational therapy process by eliminating barriers and improving function (American Occupational Therapy Association, 2015). The purpose of this pre-experimental study was to address a practice gap among special educators working with secondary transition program students. Its aim was to determine the impact of professional development trainings in the consideration, assessment and documentation of assistive technology. It is the hope that successful implementation of person-centered AT decision-making will positively impact the integrated employment options and opportunities for young adults with intellectual disabilities.

Section Two: Review of the Literature

This literature review focused on information relevant to young adults with intellectual disabilities, their participation in meaningful work, and the support they receive in gaining skills and independence through the application of assistive technologies. Included is information required to further the need for the capstone. The information was retrieved through a search of academic journals using key words such as assistive technology, integrated employment, intellectual disabilities, barriers, and post-secondary. Academic data bases such as CINAHL, PubMed, and Google Scholar were utilized to analyze current research on assistive technology implementation within secondary transition services. The American Occupational Therapy Association (AOTA)'s website, the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) website, and related materials were explored to support content knowledge about the topic.

Integrated Employment Factors

The research available to review on the perspectives of individuals with ID in the workplace suggests both employment motivation and perceived obstacles. Kocman and Weber (2018) reviewed the literature on job satisfaction and work motivation among individuals with ID. Employees with ID were found to have higher job satisfaction levels across different settings when compared to workers without ID. It was also reported that individuals with ID that were happy in their jobs tended to stay because they did not feel they had many alternatives. Li (2004) interviewed working adults with ID and found that many worry about job possibilities because of factors including insufficient work skills and qualification and discrimination. Ali et al. (2010) report that individuals with disabilities want to work, have similar job experiences as persons without disabilities and value the same characteristics of being part of the working community. Individuals with disabilities express a high desire for working but are less likely to be searching for work than their non-disabled peers. This is reportedly due to lower levels of optimism about finding the right fit. Ali et al. (2010) suggests that individuals with disabilities may feel that their disability may impact their productivity and fewer jobs are available to them. It is also suggested that they feel less optimistic regarding employment due to negative perceptions of potential employers.

When investigating the disadvantages individuals with intellectual disabilities face when looking for work, it is important to consider the views and perspectives of potential employers. Riesen and Oertle (2019) surveyed employers and found they were open to developing work-based learning opportunities for persons with ID but had concerns that included work potential. This work revealed misconceptions about the abilities of this population. Similarly, Kocman et al. (2017) found that employer's perceived lack of ability or skill was the most significant

hesitation to hiring an individual with intellectual disabilities. Their study revealed that employers consider more barriers for hiring persons with intellectual disabilities and mental disorders than persons with physical impairments. Bonaccio et al. (2019) explored 11 employers' concerns that occur throughout the cycle of employment that fall into categories of recruitment and organizational attraction, employment selection, social integration, and performance management concerns. Their work discusses many unfounded stereotypes related to hiring individuals with disabilities in general, such as inability to perform tasks, lower productivity, needing expensive accommodations, safety, and not socially fitting in with coworkers. They address the common hiring hesitation related to potential accommodation costs, explaining that they are often over-estimated, they are typically cost-effective, and the accommodations are often less expensive than not providing the accommodation.

Foley et al. (2012) describe transition as "the crucial task of moving from the protected life of a child to the autonomous and independent life of an adult" (p. 1747). Evidence supports the importance of self-determination among individuals with ID and quality of life. Self-determination involves the application of knowledge, skills, and beliefs to engage in goal-directed and independent decision-making (Hui & Tsang, 2012). It is considered critical in this transition to adult life as it is highly linked to positive outcomes in many areas of life, including employment (Foley et al., 2012, Wehmeyer & Palmer, 2013, Duvdevany et al., 2002).

Assistive Technology Potential

Studies have shown that AT allows individuals to perform tasks they would otherwise not be able to do, increasing levels of self-determination by promoting self-taught skills. A significant amount of evidence supports AT use among this population and its potential to improve outcomes. Damianidou et al. (2019) updated a meta-analysis evaluating the impact of

technology on employment for individuals with intellectual and developmental disabilities (DD). They concluded that applied cognitive technology supports individuals with ID and DD in the achievement of positive employment outcomes. Differences were noted between groups with differing levels of disability and significantly higher scores were noted when the technology used incorporated universal design features.

Video modeling is firmly established as an evidence-based intervention among individuals with autism spectrum disorder with and without ID. Using video models as technology supports have been found to improve skills and independence in instrumental activities of daily living (Campbell et al., 2015, Goodson et al., 2007, Mechling et al., 2009, Relfeldt et al., 2003, on-task behavior (Coyle & Cole, 2004), and vocational skills such as cleaning (Van Laarhoven et al., 2009), emailing (Fontechia et al., 2019), and complex shipping tasks (Burke et al., 2013). Schlosser et al. (2017) evaluated the use of the Apple Watch® as a universally designed tool to support children with ID and Autism by providing just-in-time visual supports. Their study concluded that the provided scene cues on the Apple Watch® display resulted in successful direction-following. Gentry (2015) employed a case study, finding that implementing an individualized approach to using a mobile device as AT bolstered memory and independence for an individual with cognitive-behavioral challenges. Similarly, Allen et al. (2012) found audio cueing to have great potential to support adolescents with ASD and ID working in product promotion, wearing *Walkaround*® costumes in a large discount retail store. These studies are relevant to this inquiry as they provide types of technology to consider for a variety of work settings as well as the increased benefit of considering AT with universal design features.

Training and Application Gap

Boot et al. (2018) used a systematic international literature search method to identify barriers and facilitators in the provision of assistive products (AP) to individuals with intellectual disabilities. Recurring barriers included cost, lack of AP awareness, and insufficient assessment. Potential facilitators were identified as an increased awareness and education regarding AP and the benefits for individuals with ID.

A qualitative research study designed and implemented by Ripat and Woodgate (2017) gained information from young adults with disabilities about their experiences using AT in support of their productivity. Using semi-structured interviews and a photovoice method, the researchers were able to better understand the significance of AT in the lives of the participants. Three primary themes emerged; “I have to figure it out myself”, “With the right AT”, and “Relational aspects of AT use”. Throughout the study, the participants promoted their AT use as necessary and significant in their participation, involvement in activities, and independence. While this study did not include individuals with intellectual disabilities, it is relevant to this work. Specifically, it demonstrates a need to address the challenges individuals face when transitioning from school-based services to the adult service model as it relates to self-advocacy skills and problem-solving abilities. Again, highlighting the importance of self-determination and the role that special educators play in preparing students for work roles.

Literature supports the need for increased AT training among professionals working with individuals with disabilities. Through survey methods, Noll, et al. (2006) found vocational rehabilitation counselors view AT as cost-effective solutions that positively impact employment outcomes for individuals with disabilities. Additionally, the counselors felt confident in the coordination, purchasing and follow-up involved in providing AT service delivery. However,

they reported a lack of confidence in the identification of need for AT. The results of this study suggest that training is needed to develop competencies around AT consideration. Because vocational rehabilitation counselors are involved in the service delivery and supports for transition-age students with disabilities, this study relates to the topic and identifies a need for support and training in AT consideration when working with transitioning individuals. Ault et al. (2013) investigated the implementation of AT in rural schools throughout six states, finding that the use of AT devices was lower in rural areas. While teachers felt they had access to AT, they reported needing more training on its use.

Giulio E. Lancioni, a recognized expert in assistive technology, writes about assistive technology for people with developmental disabilities. He highlighted a variety of positive outcomes related to technology use, including those such as memory aids and video-enhanced presentation of multiple-step tasks. Lancioni considers intervention programs as the most important factor in using assistive technology solutions with success. He speaks to the need for deliberate expansion and development of programming focusing on AT intervention to improve its application in applied settings (Lancioni, 2017).

Summary

The literature review provided valuable information related to the positive outcomes of AT implementation as well as barriers to its use in work-related tasks. The articles reviewed lay the groundwork for this researcher's Capstone Project. While this preliminary work identified few scholarly studies specific to the use of current technology use among young adults with intellectual disabilities in pre-vocational educational settings, the included studies validate the potential benefits of general consideration of and specific assistive technology use among individuals with intellectual disabilities in the attainment of meaningful, lasting, integrated

employment. Simply the scarcity of literature found that specifically addresses the use of AT in transition programming supports a need for increased training and application of AT.

Reviewed literature provided information about employer perspectives, establishing that they often have misconceptions and view individuals with ID as lacking the skills necessary to complete their work. Additionally, they often falsely believe that accommodations would be too costly. If post-secondary students with ID were to experience more practice in the use of AT, particularly those with universally designed features, skill levels would likely increase through the use of commonly used items. When students learning vocational skills are involved in assistive technology consideration process, they are gaining skills to advocate for what they need to potential employers. The need for self-determination skill development among this population is a common theme throughout the literature review.

Section Three: Methods

Project Design

This project examined the impact of a professional development training for special education case managers on assistive technology consideration, assessment, and documentation specific to secondary transition programming for individuals with disabilities. The training content included AT legislation, district policies and procedures, as well as evidence-based AT tools to consider supporting cognitive functions (see appendix A). A pre-experimental one-group pretest-posttest design was used to measure outcomes (Creswell & Creswell, 2018). Pre-training surveys established a baseline of AT knowledge and application among special education teachers. Following two one-hour program-specific professional development trainings, a post-training survey determined the impact of training on the consideration, assessment, and documentation of AT, in addition to perceived confidence and competency.

Setting

The Capstone Project took place in a Midwestern city at a tri-district secondary transition program for 18-21-year-old individuals with disabilities. The goal of the secondary transition program is to teach and support young adults in the three areas of transition: employment skills, postsecondary education, and independent living. The program had 30 students enrolled the in the special education setting, with three case managers coordinating, facilitating and implementing their programming at the time of the study. This selected setting allowed this researcher to examine the effect of AT training on the programming for individuals at a vital time in their lives when they are developing their job skills with a special education team of support.

Identification of Participants

The inclusion criteria for this study were special education teachers/case managers employed in the tri-district secondary transition program. This included three full-time employees with special education licensure and training to work across multiple disability areas. In addition, one of the special education teachers is licensed as a work-based learning coordinator. They were recruited through a written explanation of the study that was included in the emailed digital pre-training survey. Additional program staff, such as non-licensed paraprofessionals were excluded in this early stage of investigation.

Project Methods

Pre- and post-training project surveys were developed using Qualtrics, an online survey instrument. This software allowed for digital distribution and multiple options for the descriptive analysis of data. The survey was divided into three sections: assistive technology consideration, assistive technology evaluation, and assistive technology documentation. The survey questions

were primarily based on the *Self-Evaluation Matrices for the Quality Indicators in Assistive Technology Services* (The QIAT Community, 2015). Each section included several questions using Likert-like scale responses and one open-comment question to elicit more qualitative information (see Appendix A). The survey consisted of 14 questions. In order to obtain specialized knowledge, an expert panel was used to pilot and review the survey items for validity and to determine if modifications were needed. After the project participants were provided with details about the project and information regarding their voluntary participation and confidentiality, they completed the pre-training survey. The professional development sessions followed, and the teachers were provided with six months of time to implement what they learned prior to completing the post-training survey.

Descriptive statistics were used to analyze the pre and post-test survey data following the implementation of the professional development training. The purpose of the statistical analysis was to describe and illustrate how the training intervention impacted the consistency and quality of AT services in the transition program. Creswell and Creswell (2018) describe the use of means, standard deviations, and score ranges in the descriptive analysis of data. Survey responses contained numerical data in the form of ordinal scales that measured the impact of the AT training. For example, participants rated themselves from "1-never" to "4-always" on a quality indicator such as "AT use is written in the IEP in a way that describes how it contributes to the achievement of measurable outcomes or transitional goals". This allowed the researcher to assess for statistical differences between the pre and post-training responses. In addition to numerical data, the open-ended survey questions provided the researcher with qualitative information about the participants perceptions, attitudes, and levels of confidence regarding the training content.

Outcome Measures

Survey studies require not only careful development and implementation of the surveys, but also rigorous attention to data (Forsyth & Kviz, 2018). The researcher performed statistical analysis of the data using the Qualtrics online survey instrument. Use of this instrument provided the researcher with numerical statistical data and visuals in the form of tables and charts to illustrate the impact of the professional development training on AT consideration and implementation among the three special educators. Data was analyzed on all four project outcomes:

1. The training impact on confidence levels of special educators with knowledge and resources to match student need with AT tools.
2. The training impact on special educator abilities to thoroughly consider and assess individual student AT needs.
3. The training impact on special education teachers' abilities to document AT consideration and assessment in special education comprehensive evaluations and individualized education programs (IEPs).
4. The training impact on collaboration around AT problem solving between members of IEP teams, including transition students.

It is important to identify threats to validity in experiments and design them in a way that minimizes the impact (Creswell & Creswell, 2018). Response bias is identified by Forsyth and Kviz (2018) as a potential threat to survey rigor. Careful consideration was given to the development of survey questions and the expert panel was used to ensure that they reflected what the researcher wanted to know, but also did not present bias. In an effort to reduce bias, the

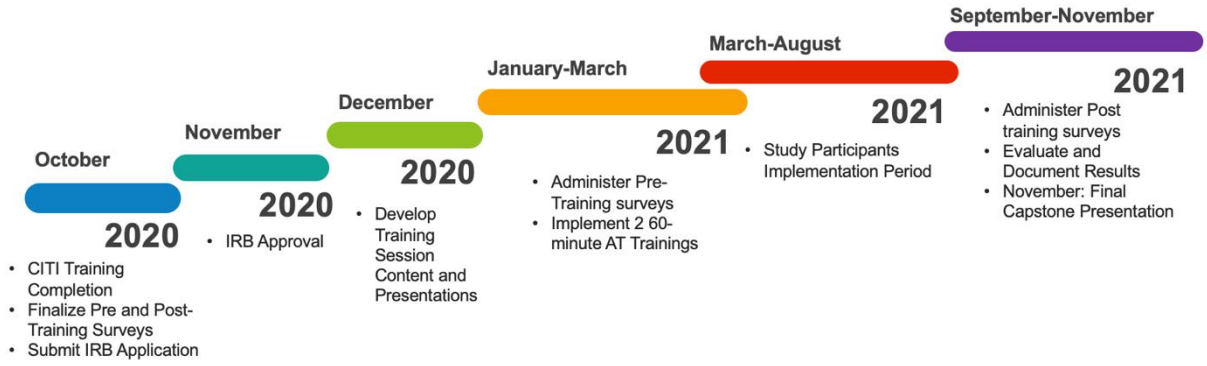
surveys were anonymous, questions were worded clearly and simple, and options for responses were not influencing.

Ethical Considerations

The risks for this study were determined to be minimal and exempt status approval was obtained from the Eastern Kentucky University (EKU) institutional review board on 11/11/2020. Participants were fully informed about the purpose of the study and study details before they choose to participate (Workman et al., 2017). It was clearly communicated that their participation was voluntary, and they could decide to end their participation at any time. Additionally, an expert panel was utilized to review all aspects of the study to ensure it was completed in an ethical manner. Careful consideration was given to ensuring confidentiality among the three participants and all study information and data was stored in a password-protected online management system. Descriptions of their work and program were generalized.

Timeline of Project Procedures

Figure 1: Capstone Procedure Timeline



Section Four: Results and Discussion

Introduction

The purpose of this Capstone Project was to develop and evaluate the impact of secondary transition program-specific professional development training in AT for special education teachers. Policy efforts link the use of AT to enhance opportunities to work and engage in communities, however school systems often struggle to address AT-related legislation efforts and develop systems that address student AT with proficiency (Bowser et al., 2015). Within a midwestern school district, needs assessment data indicated insufficient AT consideration, evaluation, and documentation in secondary transition programming.

Demographics

Three full-time licensed special education teachers participated in this feasibility study. These individuals also serve as case managers in the program. Two participants identify as female and one identifies as male. The male participant has less than 5 years of experience as a teacher, while the two female teachers each have more than 15 years' experience working in special education.

Survey Results

The objectives of this Capstone Project were to determine if program-specific AT professional development trainings increased special education teacher-reported application in the areas of AT consideration, AT evaluation, team AT collaboration, and AT documentation in IEPs. Additionally, it evaluated the impact on teacher confidence levels related to AT. Pre and post-test surveys were used prior to and six months after two professional development one-hour trainings. Due to the COVID-19 Pandemic, the intervention trainings were presented in a live virtual format using Google Meet. The Qualtrics online survey instrument was used to deliver

the surveys and analyze data (see Appendix B). Quantitative information was obtained through the use of ordinal scales., while qualitative information was obtained through three open-ended questions.

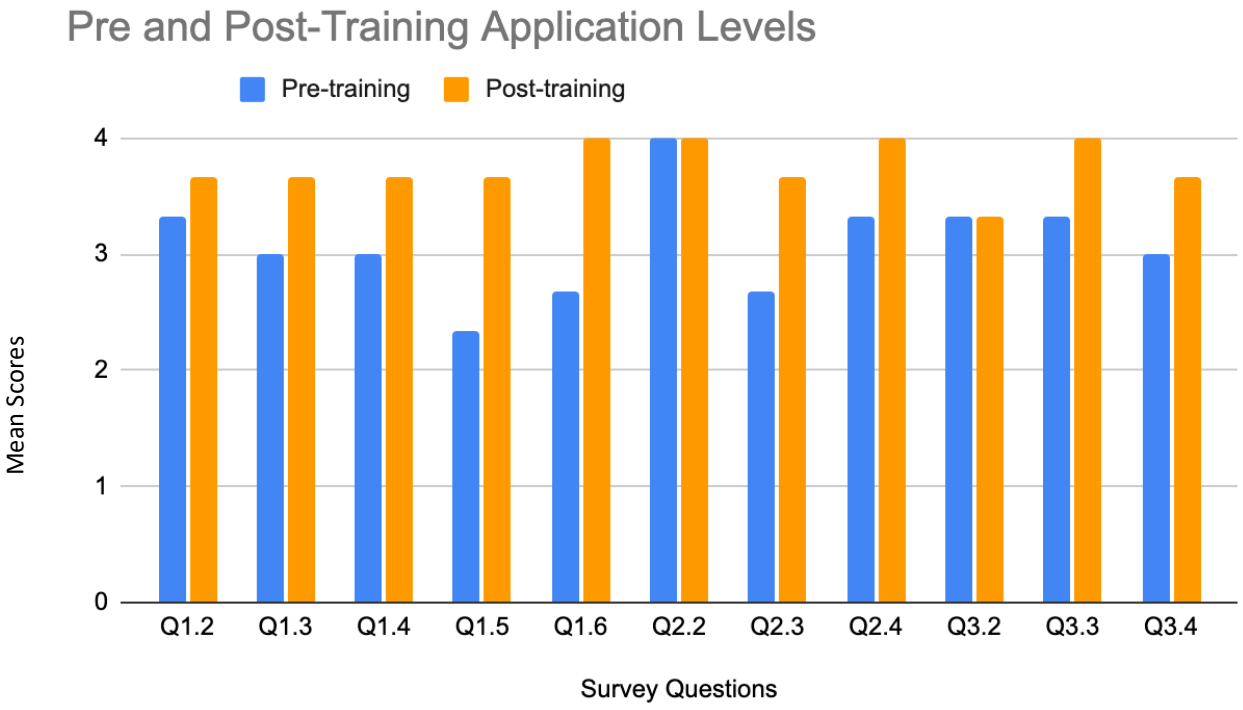
To determine the AT training impact on the project's objectives, survey mean scores were compared between pre-training and six months post-training to determine if the scores were statistically significant. A paired t-test was used for this comparison. Table 1 summarizes the data from pre- and post-test training. Figure 2 summarizes the data in visual form by changes in the individual questions.

Table 1: Comparison of Pre-Training and Post-Training for Individual Survey Questions

		Pre-Training vs. Post-Training Intervention		
Questions	Associated Outcomes	Pre-Mean (SD)	Post-Mean (SD)	*P* value
Q1.2	AT consideration and assessment	3.33 (.47)	3.67 (.47)	.67
Q1.3	AT consideration and assessment, team collaboration and problem-solving	3 (.82)	3.67 (.47)	.53
Q1.4	AT consideration and assessment, team collaboration and problem-solving	3 (.82)	3.67 (.47)	.53
Q1.5	AT consideration and assessment, team collaboration and problem-solving	2.33 (.47)	3.67 (.47)	.057
Q1.6	AT consideration and assessment	2.67 (.47)	4 (0)	.057

Q2.2	AT consideration and assessment	4 (0)	4 (0)	-
Q2.3	AT consideration and assessment, team collaboration and problem-solving	2.67 (.47)	3.67 (.47)	.42
Q2.4	AT consideration and assessment, team collaboration and problem-solving	3.33 (.47)	4 (0)	.42
Q3.2	AT documentation	3.33 (.47)	3.33 (.47)	-
Q3.3	AT documentation	3.33 (.47)	4 (0)	.42
Q3.4	AT documentation	3 (.82)	3.67 (.47)	.42

Figure 2: Application Ratings Pre-Training and Post-Training



While nearly all mean scores increased after the training intervention, the impact of the transition program-specific assistive technology training sessions on each survey question was not statistically significant. The most notable increases in mean scores were associated with

questions Q1.5 and Q1.6, “My IEP team has the collective knowledge, skills, and resources needed to make informed AT decisions and seeks assistance when needed,” and “Decisions regarding AT are based on transition goals and relate to information about the individual student, their environments, and tasks within those environments.” There was not a change in the mean score of question Q3.2, “AT consideration discussion results are documented in at least one section of the IEP.” suggesting the trainings did not impact skills and application in this area of documentation. Additionally, there was not a change in mean scores for Q2.2. However, this question elicited an ordinal scale rating of “4-always” before and after training for all three participants, indicating participants already viewed themselves as proficient in this area.

When pre and post-test mean scores were analyzed by the section areas of AT consideration, AT evaluation, and AT documentation, a significant statistical difference was noted in the area of AT consideration, with a *p* value = .01. While participants reported overall increased frequency in the application of training content in the areas of evaluation and documentation, the increases were not statistically significant. These results are summarized in Table 2.

Table 2: Comparison by Section

		Pre-Training vs. Post-Training Intervention		
Survey Sections	Associated Questions	Pre-Mean (SD)	Post-Mean (SD)	*P* value
Assistive Technology Consideration	Q1.2, Q1.3, Q1.4, Q1.5, Q1.6	2.87 (.34)	3.73 (.13)	.01*
Assistive Technology Evaluation	Q2.2, Q2.3, Q2.4	3.33 (.54)	3.89 (.16)	.20

Assistive Technology Documentation	Q3.2, Q3.3, Q3.4	3.22 (.16)	3.67 (.27)	.18

*p < .05

Limited information was gathered from the survey's open-ended questions, with 33.33% left unanswered among the group. Of significance, prior to the training, the words "somewhat" and "moderate" were used when describing knowledge and confidence levels, while one participant described themselves as "very confident" after training. One participant shared "I have gained knowledge this year and feel the AT evaluation process has been very streamlined with students in transition".

Discussion of Findings

This project focused on the provision of special educator AT training specific to the needs of secondary students with ID in transition as one method to address poor vocational outcomes among this population. The need to improve vocational outcomes for our community members with ID is well-established and literature affirms that AT has great potential to improve task performance and leads to increased self-determination. The SETT framework served as the project's guiding theoretical foundation and was used in the design of the professional development sessions. Training content highlighted the consideration of several forms of low to high-tech cognitive supports found to be successful among this population in reviewed studies. This preliminary pre-experimental study found the application of the QIAT community's established quality AT service descriptors increased following program-specific training (2015), as noted in the established literature.

AT Service Confidence. The first study objective was to improve the confidence of special educators with knowledge, skills, and resources to match student need with AT tools. This preliminary work investigated the impact of AT training among special educators in this

practice setting, an area not addressed in literature searches for comparison. The training impact on confidence was measured through open-ended questions on the pre- and post-training surveys. Response rate in this qualitative data section was low, at 67%. Confidence levels were described as “somewhat” and “moderate” prior to training and one participant described themselves as “very confident” after training.

AT Consideration and Assessment. The second study objective was to improve special educator abilities to thoroughly consider and assess individual student AT needs. Within the training sessions, the SETT framework was used to guide the taught AT consideration process with specific examples of student characteristics, their program and work site environments, tasks within those settings, and a wide variety of tools to consider when making decisions regarding accommodations to increase independence and meaningful engagement. The AT quality indicator area of *consideration of AT needs* was determined to be the most impacted by the trainings, with a statistically significant score (p value = .01), suggesting additional training in the SETT decision-guiding structure positively influenced AT consideration specific to the needs of young adults with ID exploring work opportunities. This reinforces the use of Joy Zabala’s SETT framework in it’s ability to promote collaborative decision-making, supporting both participation and success (2005) .

AT Documentation. The third objective was to improve special education teachers’ abilities to document AT consideration and assessment in special education comprehensive evaluations and IEPs. Reported levels of application of content either stayed the same or increased slightly in this area and were not determined to be statistically significant. This is an area that warrants further investigation into the effectiveness of training design and content.

AT Collaboration. Finally, this work aimed to improve collaboration around AT problem-solving between members of IEP teams, including transition students. The special educators involved in this study reported increased frequency in the inclusion of transition program students in AT consideration discussions. As active problem-solving members of their educational plans and necessary adaptations, these young adults will gain opportunities to develop independent decision-making. The importance of self-determination became a theme in reviewed studies. Foley et al., (2012), Wehmeyer & Palmer, (2013), and Duvdevany et al. (2002), all discuss how critical self-determination skills are during this transition. It is linked to positive outcomes in all areas of life, including employment. Student involvement in these AT discussions and problem-solving are vital to develop these skills, leading to increased ability to self-advocate for needed technology in future work settings.

Strengths and Limitations of the Study

This Capstone Project successfully addressed an identified need in this tri-district secondary transition program, thus providing information to enhance the existing program. Information gained will guide future interventions and program development to ensure that thorough well-documented AT consideration occurs for all students within this transition program to expand work opportunities upon graduation and transition into adult services.

This study was not without limitations. Information and data obtained from this small sample size is useful within this select program but cannot be generalized to other similar settings. Secondly, the duration of six months-time between the pre and post-test was designed to provide adequate time for the special educators to implement what they learned in the training sessions as they completed transition program student evaluations and individualized education programs. However, this could be viewed as a threat to internal validity as other factors may

have influenced participants outside of the training intervention. The poor post-test response rate for open-ended questions was unexpected and can also be viewed as a study limitation. One reason for this may be the timing of the post-survey distribution. The survey was distributed by email the first week the special educators returned to work at the start of a new school year. This transition is often a stressful time for teachers, with added anxiety related to unknown factors related to the COVID-19 Pandemic and learning models associated with mitigation strategies. This stress may have impacted these participants ability to devote their detailed attention to the survey, skipping over some of the questions. Additionally, despite careful consideration in the development of survey questions to reduce response bias, when using a digitally delivered survey, participants many have different interpretations of questions when they are not presented in a face-to-face format. Lastly, the researcher's district role as assistive technology specialist may have influenced responses to questions. Although surveys were anonymous, it is possible the participants may have overinflated pre-training scores due to social desirability bias.

Implications for Practice

This work provides valuable information to guide decisions on efforts to build capacity in AT services in transition programming. Statistically significant gains were not made in all surveyed areas of AT application, suggesting this traditional professional development format delivered virtually may not meet all training needs. However, the small sample size may also contribute to less significant gains. As we strive to meet individual learning needs of our students in school-based settings, this personalized approach could be applied more to our adult learners as well. As occupational therapists, we are skilled in person-centered interventions and a more thoughtful application of these skills to coach other professionals may improve training outcomes. Not only is content consideration important when designing professional

development, but we must also design the delivery in a way that meets the learning needs of each participant.

This work helps establish the value occupational therapy can bring to special education teams in transition programming. As previously discussed, occupational therapists have limited roles in transition programming. Research completed by Rosner et al. (2020) confirmed a need for increased representation of occupational therapists in transition programming to improve student outcomes through evidence-based studies and application. This Capstone Project highlights our abilities to support special educators in their development of problem-solving and decision-making related to the provision of person-specific assistive technology tools and materials. It also substantiates our profession's commitment to occupational justice and our affirmation that all persons have the right to access and engage fully in meaningful occupations within society (AOTA, 2020).

Future Research

This capstone project produced an increase in the application of quality AT services following setting-specific AT professional development training within one secondary transition program. There is a lack of research on the outcomes of assistive technology training within transition programming to guide our evidence-based interventions. As a pre-experimental designed feasibility study, this capstone project effectively establishes the need for more research, expanding it to a larger population of special educators in multiple programs.

With a strong focus to improve vocational outcomes, another future application would be to assess long term relationships between quality AT service and levels of work opportunities and job satisfaction among young adults with ID. This is important in the evaluation of

programming intended to develop self-determination skills and participation in meaningful work occupations that provide life satisfaction and occupational balance.

Summary

The purpose of this Capstone Project was to develop and evaluate the impact of AT professional development trainings on AT service quality indicators among special educators in a secondary transition program. Pre-training surveys were administered to collect data from three special educators on their application of AT indicators of AT consideration, AT assessment, and AT documentation. Participants then engaged in two transition program-specific AT training sessions. After six months of implementation time, the special educators completed the post-training survey.

Paired t-tests were used to compare pre- and post-training mean scores. Increases in application frequency were noted in almost all areas. The impact of the training sessions on each survey question was not statistically significant, but items grouped into the quality service indicator area of AT consideration were statistically significant, with a p value of .01. Limited data was collected through open-ended questions, but the words “somewhat” and “moderate” were used when describing knowledge and confidence levels before training, while one participant described themselves as “very confident” after training.

This preliminary study investigated the impact of AT training among special educators in secondary transition programming. The results provide useful information that can be used to guide decisions regarding additional training and interventions to build capacity in quality AT service delivery for young adults transitioning into work roles within this program. Successful implementation of person-centered AT problem-solving and decision-making could positively

impact the integrated employment options and opportunities for young adults with intellectual disabilities. This work validates a need for additional research in this area.

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Appendix

Appendix A. General Training Outline

I. Session 1

- A. Legislation and Policy as it Relates to Assistive Technology
- B. District and Program-specific Guidelines and Resources
  1. AT IEP Consideration
  2. AT Evaluations
  3. AT Documentation in IEPs and Evaluations

*Documentation forms, checklists and IEP and re-evaluations reviewed through a district staff intranet tour of resources

II. Session 2

- A. Review of Session 1 Concepts: Interactive Activity
- B. Case Examples / Specific AT to Consider

*Specific student examples used with modeled consideration process of tools to support areas of executive function and reading as they apply to common job tasks

Appendix B. Qualtrics Pre-and Post-Training Survey

AT CONSIDERATION

You are being invited to take part in a research study on the impact of program-specific assistive technology professional development sessions on post-secondary licensed staff in special education. This study is being conducted by Jennifer Veenendall, occupational therapist and assistive technology professional, at Eastern Kentucky University. If you decide to participate in the study, you are asked to complete the survey below and attend two one-hour training sessions. After six months, you are asked to complete a post-training survey. Each survey is expected to take no more than 10 minutes.

This study is anonymous. You will not be asked to provide your name or other identifying information as part of the study. No one, not even members of the research team, will know that the information you give came from you. Your information will be combined with information from other people taking part in the study. When we write up the results of the study, we will write about this combined information. We will make every effort to safeguard your data, but as with anything online, we cannot guarantee the security of data obtained via the Internet. Third party applications used in this study may have terms of service and privacy policies outside the control of Eastern Kentucky University.

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during this study and still keep the benefits and rights you had before volunteering.

This study has been reviewed and approved for exemption by the Institutional Review Board at Eastern Kentucky University as a research protocol number [Add final approval number]. If you have any questions about the study, please contact Jennifer Veenendall, jennifer_veenenda@mymail.eku.edu/715-531-8692. If you have any questions about your rights as a research volunteer, please contact the Division of Sponsored Programs at Eastern Kentucky University by calling 859-622-3636.

By completing the survey that begins below, you agree that you (1) are at least 18 years of age; (2) have read and understand the information above; and (3) voluntarily agree to participate in this study.

How knowledgeable and confident do you feel in the IEP AT consideration process?

Assistive technology devices and services are considered for all of my students, regardless of the type or severity of the disability (for example, I consider AT for students with memory and attention needs in addition to physical needs).

1: Never ○ 2: Sometimes ○ 3: Most of the Time ○ 4: Always ○

Transition program students are involved in an AT discussion at their IEP meeting.

1: Never ○ 2: Sometimes ○ 3: Most of the Time ○ 4: Always ○

During IEP development, a collaborative decision-making process is used that supports a systematic consideration of each of my student's possible need for AT devices and services.

1: Never ○ 2: Sometimes ○ 3: Most of the Time ○ 4: Always ○

My IEP team has the collective knowledge, skills, and resources needed to make informed AT decisions and seeks assistance when needed.

1: Never ○ 2: Sometimes ○ 3: Most of the Time ○ 4: Always ○

Decisions regarding AT are based on transition goals and relate to information about the individual student, their environments, and tasks within those environments.

1: Never ○ 2: Sometimes ○ 3: Most of the Time ○ 4: Always ○

AT ASSESSMENT

How knowledgeable and confident do you feel in the AT Evaluation process?

The district "Assistive Technology Checklist: Transition" is included in every student's special education evaluation, at a minimum.

1: Never	2: Sometimes	3: Most of the Time	4: Always
○	○	○	○

Use of the district "Assistive Technology Checklist: Transition" is a collaborative process, completed with more than one team member.

1: Never	2: Sometimes	3: Most of the Time	4: Always
○	○	○	○

When my student's IEP team does not feel they have the collective knowledge, skills, and resources to fully evaluate AT for more complex student needs, I seek assistance from an AT or AAC Specialist.

1: Never	2: Sometimes	3: Most of the Time	4: Always
○	○	○	○

AT DOCUMENTATION

How knowledgeable and confident do you feel in the AT documentation process in comprehensive evaluations and IEPs?

AT consideration discussion results are documented in at least one section of the IEP.

1: Never	2: Sometimes	3. Most of the Time	4: Always
○	○	○	○

When AT is identified as a need through the consideration process, AT services are included in the IEP services grid.

1: Never	2: Sometimes	3: Most of the Time	4: Always

In the IEP, AT is described in a way that clearly relates to student needs and transition goals and objectives.

1: Never	2: Sometimes	3: Most of the Time	4: Always
○	○	○	○